THE VETERINARY RECORD

A Weekly Journal for the Profession.

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An Objection to Opium.

A fortnight ago we noted the results of some experiments by three French investigators, who find that morphine and heroin, *in vivo* and *in vitro* alike, reduce the vitality and activity of leucocytes. The observation can scarcely be called absolutely new; and, indeed, the effect which opium and at least some of its derivatives exert upon leucocytes—especially with regard to their phagocytic action—has not yet received due consideration from clinicians.

So long ago as 1898, Cantacuzène published experiments showing that the subcutaneous injection of tincture of opium into guinea-pigs not only inhibited the diapedesis of the leucocytes, but markedly reduced their phagocytic action upon the cholera vibrio. His experiments were, however, pathological rather than clinical in their object. They were, in fact, a part of the great controversy upon the truth of the phagocytocic theory itself, and their bearing upon the position of opium in medicine does not seem to have been generally considered.

Very recently the latter point has been raised. In last week's *Lancet* appears an article by Capt. Leethem Reynolds, of the Indian Medical Service, detailing a few experiments of his own upon guinea-pigs and one dog, and raising the question of their bearing upon the medicinal use of opium and morphia. The results of the experiments (in which morphia instead of tincture of opium was injected subcutaneously, and *Staphylococcus aureus* used to test the effects upon phagocytosis) were quite similar to those of Cantacuzène. Diapedesis and phagocytosis were both markedly retarded; while, on the other hand, the addition of morphia to cultures of the staphylococci *in vitro* appeared to exercise no appreciable influence upon their growth.

Upon these results, Reynolds naturally suggests that in many cases in which opiates are given, their undoubted utility in relieving pain may be more than counter-balanced by their depressant effect upon the natural defences of the body. Probably more will be heard of the question very soon, and there seems room for further experiment, not only with regard to opium, but to some other narcotics. And certainly when we consider many of the accepted uses of opium and morphia, such as the well-known morphia-scopolamine anæsthesia in surgery, the morphia narcosis for the same purpose that has lately found much favour amongst English veterinarians, and, above all, the frequent use of opium and morphia in acute infections like peritonitis, it is clear that the question should be followed carefully by our profession.

FRACTURES IN FOALS.

I have read in *The Veterinary Record* the cases of fractures in cattle reported by Mr. W. Walters, M.R.C.V.S., and where he asks for information with regard to its being worth while occasionally to set limbs in foals.

I am pleased to give him from my clinical notes two complete successes in sucking foals. They both belonged to the same breeder and both were treated without slings.

The first was a carting foal which sustained a fracture just above the hind fetlock joint.

I first saw it on the 6th May, 1891, and merely supported it with a bandage for the time being.

May 7th. I fixed the fracture first with a strong bandage made of barding and put over that a woollen bandage. I then used Gooch's splint, which I cut to the length and to the width required—that was, so that it did not quite meet round the leg, so that I could tighten it well up with a Burgess plaster bandage.

May 15th. Everything in position: I did not interfere.

24th. Saw it again. Did not interfere.

29th. Though all seemed right I ventured to take all off and put on fresh bandages, and the same Gooch's splint which, though the wood part was somewhat softened by the plaster bandage, I thought was strong enough to last another turn. I used two plaster bandages for support this time.

June 7th. Took all off again and found a skin wound, which I dressed with Iodoform ointment on a piece of fine linen. I then bandaged up as before, but without Gooch's splint.

June 9th. The wound was again dressed as before, ointment was left for redressing, and the animal is now perfectly sound, but of course there is a little substance to be noticed.

Case II.—This also a sucking foal (colt), by Martyrdam, out of a clean legged cart mare.

July 25th, 1892.—The radius was fractured about its lower third, and the points of the fractured ends could be very distinctly felt; I was afraid they would break through the skin during his struggles whilst we were setting the limb.

I may say that in both cases I had the animals put on their broad side. They were cast exactly in the way you would cast a sheep, and then I pulled both limbs straight and saw that they were exactly the same length. A man held them in that position until I had fixed the fracture.

I treated this case in exactly the same way as the other, first a strong narrow barding bandage, then a woollen one to level up the leg. I allowed

the Gooch's splint to come a little below the bend of the knee, and of course also the woollen bandage, and at the same time allowed plenty of length up to arm to allow for slipping.

June 27th.—All in position and appearing well.

30th.—Still all going on well.

August 2nd.—Splint slipped down, and I had to rebandage.

8th.—Had to rebandage on account of slipping—used two rolls plaster bandage.

12th.—Supported by more plaster bandage.

16th.—Took all off and put a fresh Gooch's splint on. Used two rolls plaster bandage again.

26th.—Rebandaged and wound dressed.

28th.—Rebandaged and wound dressed.

Sept. 5th.—New splint and bandages.

This case was sound in 48 days. I saw both these animals working and sound years after.

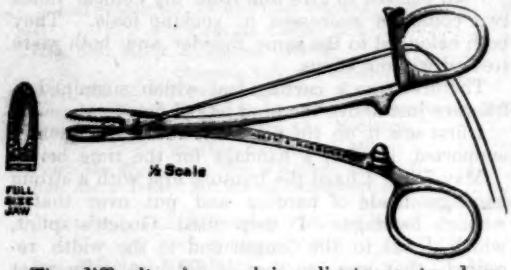
HENRY SNARRY, M.R.C.V.S.

Castleford, Yorks.

NOTES ON SOME USEFUL INSTRUMENTS.

By E. WALLIS HOARE, F.R.C.V.S.

SCHOEMAKERS ARTERY FORCEPS AND LIGATURE HOLDER.



The difficulty in applying ligatures to deep-seated vessels is well known. It frequently happens that after the vessel is grasped by the artery forceps, it is impossible to get the ligature beyond the point of the instrument or to make certain whether the vessel is secured by the ligature.

The above instrument I have found most useful in such cases, as it is impossible for the ligature when tied to catch the point of the forceps.

The ligature is fitted to the forceps before use, and when opening the forceps the ligature is not disturbed in any way. When the artery is taken up the loop of the ligature slips off the end of the forceps, and the vessel can be ligated with perfect security. I have also found the instrument handy for ligating the spermatic artery in castration of the dog and cat.

The instrument is made in two sizes, viz., five inches and seven inches long.

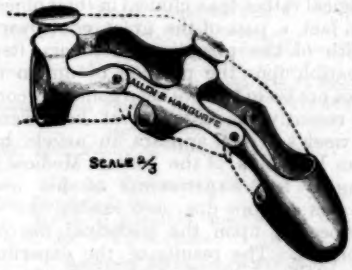
GRAY'S OBSTETRIC FORCEPS FOR THE BITCH.

Having tried almost every pattern of forceps and found them "wanting." I obtained the above instrument, and have found that it fulfils all the requirements. In consequence of its shape and small size it can be manipulated with far greater ease than any other pattern, and it gives a very secure grip; besides, the risk of catching the mucous membrane in the blades is reduced to a minimum.

For cases of dystokia in the smaller breeds, I consider this instrument invaluable, and I have employed it in some very serious cases with success.

METAL FINGER GUARD.

This is the invention of Dr. Childe, a human surgeon. In making dependent orifices for drainage, it is well known that the finger is the best director and probe. But there is always the risk that in making the incision the finger may be wounded.



By the use of the above instrument this danger is avoided, and the incision can be made in the right place and neatly, without any risk. The finger guard is jointed to correspond to the finger-joints, and can be made to fit any sized finger.

MAYO'S OPERATING SCISSORS.

This may be described as a medium between a sharp-pointed and a broad-pointed scissors. The blades are fitted so as to cut very closely, and I have found it very useful in dissecting out cysts, tumours, etc. When the scissors are closed it forms an efficient blunt dissector.

All the above instruments are made by Messrs. Allen and Hanbury, Wigmore Street, London, W.

ABSTRACTS FROM FOREIGN JOURNALS.

An Epidemic Disease of Geese.

Frösch and Bierbaum report (*Centralblatt für Bakteriologie, U.S.W.*) the results of their bacteriological investigations of an epidemic among geese, in which the birds, though preserving good appetites, rapidly became emaciated, and died of debility. As the causal agent of the disease, the authors established a slender bacillus with distinctly rounded ends, which was present in great numbers in the cardiac blood, in the pericardial fluid, and in fibrinous deposits upon the heart, the liver, and the intestinal coils.

Cultivation was at first only successful upon nutrient media containing hæmoglobin, but afterwards succeeded upon media without this addition.

The bacillus proved to be pathogenic for geese only, and its pathogenicity was most marked when introduced by intra-muscular inoculation. An adult goose could not be infected by feeding with the organs of one that had died of the disease after being artifically infected. The virulence of the cultures rapidly became attenuated unless kept up by regular passages through geese.

Frösch and Bierbaum have no doubt that the bacillus they describe is identical with that first found by Riemer in an epidemic of geese in Mecklenburg, and described by him as *Bacillus septicæmi anserum exsudativæ*.

As regards the classification of the organism, the authors incline to the opinion that, on the ground of its morphological and biological characteristics, it must be classed in the influenza group of bacilli. —*Berliner Tier. Woch.*

Caseous Suppuration of Sheep. (Preisz-Nocard Bacillus).

Carré states (*Revue Générale*) that the purulent lesions of sheep are caused by a group of microbes which may be considered as varieties of the bacillus of Preisz-Nocard, and which present very great analogies with each other.

Carré's practical results show that it appears possible to vaccinate the sheep against the toxic affections due to the Preisz-Nocard bacillus; and he offers his aid to veterinarians desirous of obaining the necessary vaccine.

It is also possible to protect the sheep against the affections due to the bacillus, and to its toxin by an umbilical and caudal dressing applied after birth.

Carré says that the affections due to the bacillus of Preisz-Nocard have a much greater distribution than is generally believed.—*La Semaine Vétérinaire.*

The Hereditary Transmission of Immunity against Rabies.

Konradi states (*Centralbl. f. Bakt. U.S.W.*) the results of his researches upon this question. He undertook seven series of investigations upon dogs which had been immunised against rabies by the method of von Hogyes, testing the young animals from the same litter one after another at various intervals of time as regards their resistance to rabies, and thus estimating the duration of the immunity. The researches yielded the following conclusions:

1. Immunity against rabies is transmissible by heredity.
2. The father scarcely plays any part in the transmission of immunity; the mother transmits the immunity, and does so not only when she is immunised during pregnancy, but also when she has been immunised before conception.
3. The capacity for transmission of immunity against rabies seems to increase during successive pregnancies.
4. The immunity is only transmissible to the first generation, and completely disappears in the further descendants.
5. The offspring of immunised animals show individual differences as regards the inheritance of immunity; many inherit immunity, others do not.
6. Both inherited and acquired immunity against rabies are of much longer duration than has hitherto, in accordance with the researches of Ehrlich, been supposed.
7. The blood serum of animals with inherited or acquired immunity has no rabicide action upon the virus.
8. The practice of immunisation before conception is very advisable, and can be of great utility.

Konradi also emphasises the necessity, in reporting investigations relating to this subject, of stating the length of time during which infected animals are observed. If this is disregarded, it is very easy to reach erroneous conclusions. — *Berliner Tier. Woch.*

The Etiology of Nephritis.

Maragliano (*Gazz. degli Osped.*, Oct. 7th, 1909) says it is no longer possible to classify nephritis on a purely pathological and anatomical basis; the only true starting point for classification is that of etiology. We can no longer look upon the diseased kidney as the beginning and the end of nephritis, the state of the organ being merely secondary; the reverse of this would be nearer the truth (setting aside the comparatively small number of nephrites due to ascending disease from the bladder). Both experimentally and clinically it has been found that very small quantities of kidney substance suffice to keep patients free from the phenomena of uræmia, and conversely one may get uræmia with free elimination of urine. So, also, with suppression and retention of urine, where the clinical facts show plainly that mere retention of urinary products does not suffice *per se* to cause uræmia. It seems clear that uræmia is due to the organic rather than the inorganic products of tissue change. Research directed towards the behaviour of the kidney with reference to the elimination of the organic refuse is far more likely to be fruitful than experiments with reference to the elimination of such substances as methylene blue; there is, indeed, a kind of renal coefficient of elimination for each

substance, and it does not at all follow that a kidney which will readily allow methylene blue to pass will as readily allow some half-oxidized organic product, and *vice versa*. From experiments it has been found that the chief difference in power of elimination between a healthy and a diseased kidney is that the latter allows more of the less perfectly elaborated organic scoriæ to pass through than the former. Hence the importance of estimating the relation between the total nitrogen and the ureic nitrogen. The proportion of inorganic salts in the urine is really more closely connected with the state of the heart and circulation than that of the kidneys.

Modern research tends to show that the ultimate factor in the causation of nephritis is not disease in the kidney primarily, but subtle changes in intimate cell metabolism, and that the disturbances taking place there create cytolytic substances which possess a nephrolytic action, while in little resisting predisposed renal tissue may determine necrobiotic processes with all the anatomical and functional results which follow therefrom. To hold that the kidney is the prime cause of the various symptoms of nephritis is to put the cart before the horse. The kidney is more truly the exponent of a morbid state of the whole organism. The changes in the renal tissue create the local symptomatology; the changes in the tissues, in the organs, and in the functions create the general symptomatology; the two together sum up the disease.—*British Medical Journal.*

FRACTURE OF TIBIA IN A COLT.—SPONTANEOUS RECOVERY. — By E. A. WESTON, G.M.V.A., Launceston, Australia.

A bay draft colt four years old. He had been loaned to my client to "break in," and was being used for light farm work, though his usefulness was considerably discounted owing to his having a cleft palate, which caused him to spit half his food back through his nose in a half masticated condition. I happened to be visiting the farm to see another horse, and my client asked my advice about the colt, which had fractured his tibia just a little above the hock. At the time of my visit he was standing in a stall, with a rope slung from the roof under his belly to keep him from lying down, and his manger was bespattered with half masticated food. Taking into consideration his poor condition, his cleft palate and the expense of treatment, I advised my client not to bother with him; but he was not destroyed owing to his owner objecting. About a fortnight afterwards I was again at the farm and found the colt still in the same position, and with a beautiful provisional callus formed around the fracture. However I reckoned he would soon be tired of standing on three legs, and would make a mess of his leg by starting to put his weight on it. This I explained to my client, at the same time telling him the leg was doing beautifully so far. From this out I did not see the colt, but my client informed me that he never looked back, and on inquiring a few days ago I learned that he was still alive, and that the broken leg was as straight and sound as the other. It is now nearly two years since he met with the accident.

DIAGNOSIS OF GLANDERS BY PRECIPITATION.

Dr. Willy Pfeiler, of Berlin, reports (*Archiv. f. wissensch. u. prakt., Tierheilk.*) his discovery in the blood of glandered horses of a specific precipitin which can be utilised in the diagnosis of the disease. He is now engaged in perfecting this diagnostic method, of which he has already had considerable experience.

Briefly, the method consists of superposing, in a tube, two liquids, the upper being formed of extracts of pure cultures of the glanders bacillus, and the lower of the serum of the horse to be tested. The upper liquid is slightly turbid and somewhat greyish, the lower one very clear, with a colourless disc between the two. The positive reaction consists in the formation, between the two liquids, of a very apparent greyish-white ring.

The reaction takes place at ordinary temperatures, and occurs very soon (one to ten minutes) after the first contact of the liquids. The result of the test should be ascertained during the first hour, as after that time rings due to a normal precipitation may be produced, and confuse the diagnosis.

At the time when Pfeiler published his results, he had already tested the method upon 306 horses suspected of glanders. So far, the results have been highly encouraging, as the test has never yet failed to reveal early cases of the disease, while it has only failed twice in cases of older standing.

The method is not yet perfect, but certainly merits attention, especially as it may perhaps be found possible to employ it in practical clinical work.— *Annales de Méd. Vét.* and *Berliner Tier. Woch.*

W. R. C.

EASTERN COUNTIES VETERINARY MEDICAL SOCIETY.

The annual meeting was held on Tuesday, February 22nd, at the Bell Hotel, Norwich. Mr. H. P. Standley, President, occupied the chair. There was a good attendance of members including Messrs. F. B. O. Taylor, Weston, A. S. Auger, Saxmundham; T. G. Heatley, Woodbridge; W. Waters, Blofield; H. Low, G. Mayall, Norwich; A. Holl, New Buckenham; E. W. Wright, Yoxford; W. Shipley, Yarmouth; J. Barr, Acle; J. Cleveland, Bungay; J. K. Gooch, Holt; R. B. Palmer, Norwich; F. Morton Wallis, Halstead; H. E. Wilkinson, Martham; E. H. Leach, Newmarket; J. Bee, Fakenham; T. E. Barcham, Bacton; W. L. Little, Yarmouth; S. Smith, Sen., and S. Smith, Jun., Lowestoft; J. Godbold, Stowmarket; H. F. Downe, Diss; T. E. Auger, Wymondham; W. M. Reeman, Bury St. Edmunds. Professor Woodruff, of the Royal Veterinary College, and Mr. Percy J. Simpson, Maidenhead, were were visitors, and all arrangements were carried out by Mr. J. Robertson, hon. sec. and treasurer, Stalham.

Letters regretting inability to attend were received from Messrs. M. Bray, P. Turner, F. L. Gooch, W. Jurgensen, A. H. Santy, Sir J. M'Fadyean, Prof. N.

Almond, C. Nesling, T. Love, J. Hammond, J. F. Simpson, B. W. Bloomfield, W. Hunting, J. Kitchen, W. Kerr, D. S. Jack, W. Bower, W. E. Livock, E. A. Hudson, J. F. Thurston, and E. Margarson, Swaffham.

The members first lunched together, after which Prof. Woodruff gave a demonstration at the President's premises of Prof. Williams operation on two roarers which was followed with the closest interest. Afterwards the members returned to the Bell Hotel for the business meeting.

The minutes of the autumn meeting were approved and confirmed.

CORRESPONDENCE.

The HON. SEC. read the following letter under date February 19th :—

"Midland Counties V.M.A.—Council Election of R.C.V.S.

Dear Sir,—At the annual meeting of this Association held on Friday last, the following resolution was passed, viz., 'That the Midland Counties V.M.A. join forces with the Yorkshire, Lancashire, and Eastern Counties V.M.A. on the occasion of the forthcoming election to Council and that whilst cordially supporting the candidature of Mr. A. W. Mason, Yorkshire's nominee, promises support to other candidates who are prepared to pledge themselves to support the Bill.

I might say I have been requested by my President to call a meeting of the Council of this Association with reference to adopting Mr. Trevor Spencer, the Ex-President, who has already been nominated as a candidate for the coming election, as the nominee of this Association.—Yours faithfully,

HENRY J. DAWES, *Hon. Sec.*"

The PRESIDENT proposed that they amalgamate as in former years with these Societies. This year he believed one of their own members came out. Mr. A. S. Auger seconded.

The HON. SEC. said he had written to Mr. Bower asking whether he would stand again, but received no definite reply.

Mr. HEATLEY said that Mr. Bower had represented the Eastern Counties for a number of years, and he moved that the Hon. Sec. write to him asking whether he will stand again. When they had his reply it would be time enough to take action. Mr. Smith seconded, and this was carried.

The President's proposal to combine with the other Societies as in former years was also carried.

Mr. P. Turner, Ixworth, wrote thanking the members for their kind vote of sympathy in his recent great loss by the death of his wife.

The PRESIDENT said he was sorry, as they all were, to learn what had happened to Mr. Turner since. He feared he had practically lost the sight of both eyes, and that there was very little hope of his regaining his sight. He therefore moved that a letter of sympathy be sent to him. The Hon. Sec. seconded, and this was agreed to.

Mr. HOLL said that no letter of condolence had yet been addressed to Mrs. R. Howard, of Thetford, on the death of her husband, and he proposed that one be sent.

Mr. MAYALL seconded, and the resolution was passed in silence, all upstanding.

Mr. MAYALL said that something should also be said about Prof. Axe, who certainly left something by which the veterinary profession would be able to remember him for many years to come. He moved that sympathy should be expressed with those whom he had left behind. Mr. T. E. Auger seconded, and this was similarly carried.

The HON. SEC. read an invitation from the Royal Institute of Public Health for a delegate to its conference at Birkenhead in July.

On the proposal of Mr. Shipley, seconded by the Hon. Sec., it was resolved that the President should be the delegate.

Prof. WOODRUFF said that this year the Royal Sanitary Institute was holding its Congress at Brighton with Mr. W. Hunting as President, and he would move heaven and earth to make it go. He was preparing a paper for it.

Mr. A. S. AUGER moved that a delegate be sent to the Sanitary Institute.—Mr. Shipley seconded, and this was carried.

Mr. SMITH, jun., proposed that the selection of a delegate be left to the next meeting.—The President seconded and the members concurred.

ACCOUNTS.

The HON. SEC. presented the annual statement of accounts which showed a balance in hand of £12 9s. 1d. He produced the auditor's certificate, with some comments on it by Mr. Shipley, and replied to each in detail.

Mr. WALLIS asked if the nineteen unpaid subscriptions were single or duplicate.

The HON. SEC. said they were duplicate, and one or two a little more than duplicate. There was altogether 34 guineas due to the Society.

Mr. WALLIS proposed that this matter be dealt with by the Committee.—Mr. Gooch seconded, and this was carried.

ELECTION OF OFFICERS.

President.—The President proposed that Mr. A. HOLL be their next President. They all knew him and he was one of the best.

Mr. SMITH, sen., seconding, said he was at College with Mr. Holl.—The nomination was adopted unanimously.

The PRESIDENT-ELECT said they might have found some one more able and experienced in the profession.

Vice-Presidents.— Messrs. H. P. STANDLEY, J. F. SIMPSON, and F. B. O. TAYLOR, were elected on the proposal of Mr. Shipley, seconded by Mr. Smith, junr.

Committee.—Messrs. S. SMITH, senr., T. E. AUGER, J. K. GOOCH, J. BARE, G. MAYALL, W. L. LITTLE, A. S. AUGER, and H. LOW were elected.

Auditors.— Messrs. W. SHIPLEY and W. M. REEMAN were chosen.

Hon. Sec. and Treasurer.—Mr. J. ROBERTSON was re-elected.

CHARITABLE SUBSCRIPTIONS.

Mr. WALLIS proposed that annual subscriptions of 2 guineas each be continued to the Victoria Veterinary Benevolent Fund, and to the Royal Agricultural Benevolent Institution.

Mr. SHIPLEY and the Hon. Sec. pointed out the small balance of only £12 in hand.

Mr. WALLIS altered his resolution to read that subscriptions be given to these two charities in the event of the Committee obtaining a satisfactory response to their whip round for subscriptions in arrear.—Mr. Reeman seconded, and this was carried.

NEXT MEETING.

Mr. SHIPLEY said they had always had some trouble to get papers or demonstrations for their meetings, but he had been promised a valuable paper on Swine Erysipelas to be read before their Society by Mr. Jackson, of the Board of Agriculture. They were very fortunate to secure such a paper, and he would prefer that their next meeting should be held at Yarmouth for the purpose. Mr. Jackson wrote him that he probably could not come during the last week of June or in July. He moved that the summer meeting be held at Yarmouth in September.—Mr. Bee seconded.

UMI

The PRESIDENT said it had always been their rule to held the summer meeting at Colchester, Ipswich, or Bury St. Edmunds, and it would be a pity to create a precedent and take away the September meeting from Yarmouth, because the ladies as well as the members always appreciated that meeting. He moved an amendment to hold the next meeting at Ipswich, and that Mr. Jackson be asked to give his paper at Yarmouth. —Mr. Taylor seconded.

Mr. WALLIS suggested that it be left to the Committee and Hon. Sec. to arrange. The President withdrew his amendment and, Mr, Shipley assenting, this course was agreed to.

VOTE OF THANKS.

Mr. LEACH proposed a hearty vote of thanks to Prof. Woodruff for his two operations. They were very much indebted to him for the manner in which he had performed them and explained everything. He had a cool head and just the fingers for such an operation.

Mr. WALLIS, seconding, said they were greatly indebted to Prof. Woodruff. As one of the older members who had the good fortune to see something of the previous operations, he could say that Prof. Woodruff was a very cool and clever operator. It had been a most interesting day, for which they were very much obliged to him.

The vote was passed by acclamation, and Prof. Woodruff said it had been a great pleasure to him to come to the Easteru Counties Society. If he had been able to interest them it was quite sufficient reward.

Mr. REEMAN then moved a similar vote to the President for placing all the resources of his establishment at their disposal.

Mr. SMITH seconded, and this was also carried.

The PRESIDENT said that all their thanks were due to Prof. Woodruff.

AMALGAMATION OF VETERINARY SOCIETIES.

Mr. SHIPLEY asked if there was any resolution on the minutes referring to any amalgamation scheme.

The PRESIDENT said that if he remembered rightly there was, and they were not at all favourably disposed toward it.

Prof. WOODRUFF said that if he might trench on their kindness he would like to say this was a matter in which he was personally deeply interested. He was at Birmingham the other day and had the pleasure of hearing Mr. Dawes, one of the most experienced secretaries of veterinary medical associations. He deplored the fact with some of his colleagues that they were inclined to cry down the idea of amalgamation. He pointed out one fact that would come home to them. The Eastern Counties Society had been the means of initiating one or two matters, and had sent a resolution round to all the other Associations in the country. Some of them meet three or four times and some only twice a year. Their meetings are reckoned on with difficulty, as the dates are changed, and so a circular letter takes nine months or more to go round. If it is on an urgent matter of public importance its urgency has then quite gone off, because the question has inevitably been settled by the time such a circular letter has got round and returned to the society which issued it. In other words they had no machinery for getting the opinion of the rank and file other than the Council, and they could not get a referendum of the veterinary profession on any topic unless there was some scheme of amalgamation. It bound a local society to nothing. It asked the local associations to combine and form a permanent executive who can investigate all questions from the point of view not of the governing body of the Council but of the rank and file. Just as the British Medical Association can act independently of the General Medical Council and bring its influence and weight to bear upon public authorities, Members of Parliament, and the Houses of Parliament, and also upon the General Medical Council, so the veterinary profession with a permanent executive and secretary could be organised and bring pressure to bear upon their Parliamentary representatives, upon public authorities and, to put it plainly, they could in other words establish some kind of veterinary trade union. They had suffered from the power of trade unionism, and knew how they felt it when in contact with it. Why should they be too proud to have a trade union. It need not be called a trade union, but an amalgamation of veterinary medical associations working for them on the lines of putting pressure on the Houses of Parliament, and if necessary upon the Council. It was asked if they elected the Council why did they want to put pressure upon them, because people were frightened that this might become political, and do harm to the Council, but they forgot that the Council is a thoroughly representative body. If the Council thoroughly represented them they would only be helping the Council, and not go contrary to them. He hoped they would consider this matter well, and remember the men who started it. Prof. Bradley had no axe to grind, and was a disinterested man with nothing but the welfare of the profession at heart. Mr. Hunting, with all his wide knowledge and experience of the National, was heart and soul in favour of it. Mr. Dawes with his knowledge of the Midland counties, and an old Secretary, was heart and soul for it. He He hoped they would not throw it on one side lightly, because it has meant an immense amount of labour to those who have started it. Originally started by Prof. Macqueen, it died for want of support on the part of people who did not think enough about it. There might be difficulties, but they could put their heads together to overcome them, and let them see if they could not have a really National Association—National in fact as well as name.

The PRESIDENT said he did not quite see how it would work out, because if they had a vital question it was for the Council, and the Council alone, to deal with it. As for research that would take a considerable sum of money. Then there was the benevolent part of the scheme. It was not likely the existing Benevolent funds would merge their funds with it. They might as well start a bank and expect the Bank of England to join them.

Mr. SHIPLEY said it seemed to him that the most important side of the scheme was the financial side. He did not think the originators of the scheme knew the great difficulties they had to contend with in carrying on their county associations. It was only with the greatest trouble they could get in their annual subscription of half-a-guinea, and, as they had heard that day, there were tremendous arrears. If some financial scheme could be evolved they might perhaps approach the question, but until they saw their way clear to make a grant of a guinea per head or by a lump sum he did not see how they could institute any amalgamation. Prof. Woodruff said Prof. Macqueen's scheme lapsed for want of interest, but that was not the reason. He took immense trouble about it, and went to Leeds as a delegate, and it was discussed, but it fell through on the question of finance. Take their benevolent institutions. In the Victoria Benevolent Institution they could hardly get sufficient money to pay the very small pittance it gave per week to keep the widows and children of their brother practitioners. If institutions of this kind were not supported, how on earth could they be expected to support another venture? Personally he believed members of a local Association should become members of the National, and so improve and strengthen, but he could not see how the Associations were in a position to-day to make any financial grant. He did not want to throw cold water on the scheme, because it had been an

idea of his for many years. Possibly there might be an amalgamation of the two veterinary benevolent schemes, but in such case a gentleman who subscribed his half-guinea to the Defence fund would not expect it to go to the Benevolent, and the man who gave his money purely to the benevolent would not want it spent on defence. He considered every member of the profession could afford half-a-guinea towards the support of widows and orphans of members of the profession. He was delighted to take that opportunity of saying how glad they were that Prof. Axe had left them a bequest that would come into use in future years, and he hoped it would be an example to other members of the profession, so as to place them in a strong financial position. They were not a powerful Association, but if they could in any way fall into line with a stronger Association they would do so. It would be a very great pity if the whole scheme was damned because the Eastern Counties said they could not support it, but for any amalgamation to be successful it must be thorough and complete.

The PRESIDENT said he believed they were asked to guarantee £10 towards the expenses, but that was impossible.

Mr. REEMAN said he understood that each Society was to contribute half-a-guinea per member. That would mean each member's subscription would be 21s. instead of 10s. 6d. If they could not get in the 10s. 6d. they certainly could not obtain 21s. The scheme was very much in the air at present, and he would rather give his money direct to the Benevolent than to this scheme.

Mr. MAYALL said he quite agreed with Mr. Shipley that the greatest difficulty of all was the financial one. They had an example that afternoon of what ought to be done in connection with their own Society. There were 34 guineas in arrear, and if they had that money how would they stand then in relation to the scheme? What was the good of a big membership to any Society if they could not get in the annual subscriptions? If members did not pay their subscriptions for two years they should cease to be members. As regards the scheme, all bodies of men, no matter who they might be, were uniting to-day in defence of their common interests, in defence of their trade or profession, and to see fair play. The veterinary profession in self-defence must do likewise. Doctors and Dentists had their Societies which protected them and defended their interests. It had been said, and he believed it was perfectly true, that Lawyers were the finest trade unionists in the world. It was only by organisation that science could advance in this country, and it was only by science that material progress could be made by the veterinary profession. Something had been said about research, which certainly took a good deal of money and had to be done by men who are skilled in research to be of any advantage, but that it took a lot of money to conduct research he did not think was proved, from the fact that Faraday, Galileo, and Simpson were all poor men, and but for the discoveries they made we should be very poor indeed. If practical means could be found to unite and consolidate the veterinary profession they ought to be provided, and it would be better for each individual member of the profession.

Mr. SHIPLEY said that research and trade unionism were entirely different things. If some system of trade unionism among veterinary surgeons could be devised with a nominal subscription and each member pledged himself to pay a levy on special occasions, there might be something in it. He could not see how they could collect another half-guinea per annum from members of their Association, though he agreed with a scheme of trade unionism to a certain extent if a satisfactory one could be evolved. It could be started by members promising half-a-crown per annum and pledged if necessary to pay a levy if a special occasion arose of five, ten, or even twenty shillings. He would not put such a scheme forward on his own account, but he did not see how they could carry out a trade union scheme, and at the same time promote research and benevolence. It would have to be trade unionism pure and simple, or a fund purely for research. The profession had done a good deal for research in the past. Why did not the Government do something for research? They had many men who had carried on research, and generally they were poor men who had devoted the whole of their lives to it and got nothing out of it. To carry out research they must have rich men to find the money, or who would carry it out themselves.

Mr. MAYALL said that all Mr. Shipley's arguments resolved themselves into the one question of finance. Some scheme might be adopted by which when a Society was prosperous it allocated a certain percentage of its surplus to this big Society. That would be one way out of the difficulty. Supposing they had a reserve fund of £20 they could afford to do so, and if they had only £10 they would give less. All these things had to be approached gradually and not from the point of view that a certain thing must always be done at once. It must be carried out according to the means at their disposal, it might be by a sliding scale of contributions according to the financial position of the societies. By that means the difficulty might be overcome. They could not lay down a hard and fast rule that each Society should give £10, because while some could afford it others could not. If something of this kind could be done it would be a splendid thing for the veterinary profession.

Several members having by this time left, no resolution was submitted, and the meeting ended with a vote of thanks to the President, proposed by Mr. Reeman, seconded by Mr. Mayall.

J. ROBERTSON, M.R.C.V.S., Hon. Sec.

The Bengal Veterinary Department.

An advance has been made in the province of Bengal in veterinary administration by creating a separate Civil Veterinary Department for dealing with epizootic diseases; dispensaries and travelling assistants have been placed under a staff of inspectors to watch and control their proceedings, with Mr. D. Quinlan, I.C.V.D., in chief charge. The Veterinary College remains under the superintendence of Col. F. Raymond, F.R.C.V.S., who has held the office for many years, and has now been granted an extension of three years. He also remains in charge of the administration of the Glanders and Farcy Act in Calcutta and its suburbs. The report of the College indicates continued success. There were 132 students under instruction at the close of the session; out of 29 examined, 25 passed and obtained a qualification. Various improvements have been made in the College arrangements, the chief of which is the organization of a laboratory (called after the principal), in which research and clinical work is carried on with great advantage. The death of Rajah Sheo Bux Bagla, who contributed so generously to the construction of the institution, is recorded. A useful function performed by the laboratory is the diagnosis and investigation of rabies, which is very prevalent in and around Calcutta. The report of the superintendent of the Civil Veterinary Department gives full details regarding the prevalence of epizootic diseases and the measures adopted for the purpose of dealing with them. The information obtained regarding epizootics is still very defective, but will no doubt improve in time. Interesting notes are given regarding the means taken to improve the stamp of stock, equine and bovine.—*The British Medical Journal.*

DISEASES OF ANIMALS ACTS 1894 TO 1903, SUMMARY OF RETURNS.

Period.	Anthrax.		Foot-and-Mouth Disease.		Glanders (including Farcy)		Counties Affected	Sheep Scab.	Swine Fever.	
	Out-breaks	Animals.	Out-breaks	Animals.	Out-breaks	Animals.	Animals Attacked	Out-breaks	Out-breaks.	Slaugh. tered *
GT. BRITAIN. Week ended Feb. 26	38	48			9	17		9	15	160
Corresponding week in 1909 ...	22	28			10	41	Hants 1	18	25	224
Corresponding week in 1908 ...	18	23	1	1	13	56		25	26	65
Corresponding week in 1907 ...	22	27			22	49	London 13	19	25	160
Total for 9 weeks, 1910	277	384			64	190	Surrey 1	243	203	1539
Corresponding period in 1909 ...	252	340			96	260	Warwick 2	312	263	2060
Corresponding period in 1908 ...	225	324	3	112	142	501		478	251	1051
Corresponding period in 1907 ...	167	212			173	408		284	323	1461

Board of Agriculture and Fisheries, March 1, 1910.

								Parasitic Mange (outbreaks)		
IRELAND. Week ended Feb. 19	2	2	...	...	...	1	1	11	...	..
Corresponding Week in 1909 ...	....	...	...	...	...	3	3	26	...	...
Corresponding Week in 1908 ...	...	...	...	...	...	...	...	19	3	167
Corresponding Week in 1907 ...	...	...	...	...	...	...	...	4	5	93
Total for 8 weeks, 1910 ...	4	4	...	...	...	17	17	167	6	214
Corresponding period in 1909 ...	1	1	...	...	...	21	21	142	3	12
Corresponding period in 1908 ...	2	2	...	...	...	4	4	183	25	575
Corresponding period in 1907 ...	...	...	...	...	...	21	21	102	32	566

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Feb. 23, 1910

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection

Diseases of Animals Acts—Appointments.

The report of the Executive Committee of the Berkshire County Council stated:

"Your Committee regret to report the death of Mr. Albert Wheatley, the County Veterinary Inspector, on the 24th November last. This was verbally reported at a special meeting on the 11th December, when the following Inspectors were appointed for the County, viz., Mr. George E. King, M.R.C.V.S., for the Petty Sessional Divisions of Abingdon, Wantage, Faringdon, Wallingford, and Ilsley; Mr. Percy J. Simpson, F.R.C.V.S., for the Petty Sessional Divisions of Maidenhead, Windsor, and Wokingham; and Mr. Louis Mitchell, M.R.C.V.S. for the Petty Sessional Divisions of Reading, Hungerford, and Newbury (temporarily)."—*Reading Mercury.*

The Board of Agriculture and Fisheries have appointed John Dunbar Broome, M.R.C.V.S., and Frederick William Medlock, M.R.C.V.S., to be Assistant Veterinary Inspectors (non-established); and Harry Vincent Low, M.R.C.V.S., and Robert David Williams, M.R.C.V.S., to be Local Veterinary Inspectors for the purposes of the Contagious Diseases (Animals) Acts.

Tuberculous Cows.

At a meeting of the Wokingham Rural District Council a letter was read from the Clerk to the County Council stating that the Public Health and Sanitary Committee of that body had had under consideration the question of the powers of the London County Council respecting the inspection of dairy cows in districts outside the London area. Although District Councils had no power to insist on the slaughter of a tuberculous cow, it was pointed out, they had taken measures to see that the provisions of the Dairies and Milkshops Order were carried out. The letter further stated that no veterinary inspector appeared to have been appointed by any District Council; and this Council was asked to consider the desirability of appointing a veterinary inspector to undertake the systematic inspection of dairy cows, or the appointment of a consulting veterinary inspector whose assistance should be obtained by the Medical Officer of Health, or by the Clerk or the Sanitary Inspector when tuberculosis was reported as existing in any dairy in the district.

The Chairman said this was rather a serious matter, not only on account of expense, but because sometimes Veterinary Inspectors made mistakes. On the advice of Dr. Ashby—who had not seen the animal—he himself had a cow which had been condemned by a London Veterinary Inspector slaughtered, and a post-mortem showed that there was nothing whatever the matter with it. The result was a loss of £15 to the Chairman of the District Council. (A voice: "Poor man," and laughter.)

Dr. Ashby (Medical Officer) said that anything which tended to check the spread of tuberculosis in cattle was for the benefit of the public generally, and of dairy farmers as well.

The Chairman added that if a farmer was compelled to have his cows slaughtered for the good of the public, the public ought to pay some of the loss. (A member: "All of it," and hear, hear.)

Mr. Bullingham thought it would be highly desirable that they should appoint a qualified veterinary inspec-

tor. What had happened to their Chairman might happen to other people; and if they had a veterinary surgeon of their own they would at any rate have something to stand by when those people came from London to interfere with their dairies. (Hear, hear.) He moved that the matter be taken into consideration at the next monthly meeting of the Council.

This course was decided upon.—*Reading Mercury.*

The "Anglo-Norman" Sires.

The following letter has been addressed by the Right Hon. T. W. Russell, Vice-President of the Department of Agriculture and Technical Instruction for Ireland, to Mr. P. H. Meehan, M.P., member of the Council of Agriculture:—

[COPY.]

Department of Agriculture and Technical Instruction, Dublin,
12th February, 1910.

Dear Mr. Meehan,—Following your recent queries as to the four Anglo-Norman sires which have been purchased by the Department for experimental purposes, I desire to tell you what has been arranged. Owing to the objections which have been raised to them, and which have been accepted without inquiry by several County Committees, the Department have decided to keep these sires on their own farms, and to make the experiment there. Accordingly, as I recently announced, these horses are not to be sold to persons in the country as was originally proposed, although there are many persons who, having seen the horses, have expressed a desire to buy them. The County Committee being the recognised authority in each county under the Department's schemes, the Department feel bound not to send these horses into the counties against a strongly-expressed wish of theirs, even though their resolutions have been adopted without information as to the nature of the experiment or the character of the animals.

As there has been so much misunderstanding on this matter it may be well if I explain what the object of the experiment is.

For some years past the Department have been making an experiment in horse-breeding, the results of which have been highly successful, and have led to the introduction of a large number of sires, which are much appreciated in the South and centre of Ireland. These are the half-bred sires which the Department purchase as colts, rear on their own farms, and afterwards sell, if sound and suitable, to persons who desire them. But though this experiment has been a great success in the South and Midlands, and, as it develops, is likely to prove still more successful for the production of agricultural and general purpose horses in hunter-breeding districts, it has not met the wants of Northern breeders, who have so far steadily refused to buy either the half-breds or thoroughbreds. They ask for heavier horses, and horses with action, which could help them in the business of breeding for harness purposes. So few hunter and thoroughbred sires have been sold in the North of Ireland, as compared with the rest of the country, that the Department considered it their duty to make further efforts to meet the wishes of these districts on lines which could not prejudice the national horse-breeding policy. One of the objects of the proposed experiment, therefore, was to ascertain whether the horses to be experimented with have those qualities which Northern breeders desire, and whether these qualities are likely to be transmitted to the progeny.

As to the horses themselves, as they have been variously described in this interesting controversy as "Belgian hearse horses," "Paris funeral horses," "cart horses," "grey Percherons," it is not surprising that many persons have objected to them. As a matter of fact they are horses with a large proportion of thoroughbred blood, as the following will show:—In one case out of 111 known ancestors, 66 are thoroughbred; in the second case out of 88 ancestors, 47 are thoroughbred; in the third the figures are 52 out of 85; and in the fourth, 45 out of 103.

I should add that this experiment, as well as the Department's horse-breeding schemes generally, was put before the Council of Agriculture at its meeting in November, but it did not occur to the Council, any more than to the Department, to anticipate such resolutions as have been adopted by some of the County Committees. Our County Committees have hitherto rather successfully guarded themselves against falling victims to our old friend in Ireland, the "snowball resolution." They seem to have been surprised into it on this occasion in the midst of other excitements by the curious controversy that appeared in the Press. This, after all, was hardly to be wondered at when the only information they had before them was that the horses were of a type corresponding to the picturesque description given in the newspapers.—Yours, etc.,

(Signed) T. W. RUSSELL.

P. A. Meehan, Esq., M.P.,
Member of the Council of Agriculture.

—*Irish Times.*

Origin of Domestic Sheep.

At a meeting of the Edinburgh Royal Society, Prof. Prof. J. Cossar Ewart made a communication on the short-tailed domestic sheep. Prof. Ewart pointed out that it is generally assumed that domestic sheep have sprung from an extinct long-tailed ancestor now totally unknown. Evidence was submitted in support of the view that domestic sheep are in part descended from a short-tailed race of the Moufflon type—nearly pure representatives of which still survive in a practically wild state on Sceay, one of the St. Kilda group of islands—and partly from a race of the Argali or Ovis pali type, characterised by long spiral horns. It was mentioned that though naturalists seem to take for granted that all the sheep living under domestication are characterised by a long tail, short-tailed varieties still occur in Shetland, the Faroe Islands, and Iceland, and not many years ago sheep with a tail as short as in the wild Moufflon of Corsica were common in the West of Ireland. Sometimes blackface sheep appear with a short tail—whether this is due to the presence of Moufflon blood or to reversion to a remote Argali-like short-tailed ancester it is difficult to say.

Skeletons of Horses in Museums.

The skeleton of the thoroughbred Persimmon, which the King has presented to the South Kensington Museum, will be on exhibition as soon as arrangements can be made to place it in a prominent position in the group of domesticated animals. With the skeleton of the famous Derby winner of 1896 His Majesty has presented a coloured cast of the head of the horse. Nor are these the only relics of Persimmon to be seen at the Museum, as a few years ago the Prince of Wales gave the Department a finely modelled statuette of the same horse, the work of Capt. Adrian Jones. The collection also includes the skeleton of Stockwell, who was foaled in 1849, and died in 1876, winner of the St. Leger in 1852; the celebrated Ormonde, who was an unbeaten horse, and died in California in 1904; Bend Or, Royal Hampton, Donovan, Corri Roy, and other famous English racehorses and thoroughbreds. The skull of Royal Hampton retains the sinuous Arab profile which the Museum experts have found to be always a character of horses descended from Tom King, the grandsire of Royal Hampton.—*L. S. J.*

The Grand National.

Many horses entered for the Grand National have, of late days, given the public some idea of their merit when competing in minor races. The distance in the Aintree event is 4 miles 856 yards, and includes thirty obstacles of a formidable nature. The Londoner will enjoy a better appreciation of the length of the "National" if he is told that 4 miles 856 yards represents the distance, as the aeronaut flies, lying between Paddington Station (hotel entrance) and the west front of the Mint, from Kensington Palace to London Bridge, or from the centre of Piccadilly Circus to the Middlesex side of Putney Bridge. The Manchester man who walks from the Central Station to Sale Station covers the same distance as a Grand National winner, while a Birmingham man's promenade from New Street Station to West Bromwich Station also represents the mileage that lies before a candidate for the blue riband of the steeplechase season when he proceeds to the starting-post.

To give an idea of the thirty formidable obstacles that have to be encompassed *en route*, it may be mentioned that Valentine's Brook includes a fence 4ft. 6in. high, with a breast rail in front 2ft. high close to the fence, a deep drop on the other side, and a more or less dry ditch 5ft. wide. And yet the 4½ miles (minus 24 yards), together with the negotiation of thirty fences, on an average only occupy the steeplechaser rather less than ten minutes. They are fairly bustling minutes, however. The fastest time in which the "National" has been won is to the credit of Huntsman, that forty-nine years ago beat a field of twelve apponents in 9min. 30 sec. True the distance of the Grand National has varied during the last forty-five years or more. In 1862, Huntsman's year, the distance given was "about four miles." Over the modern course Ascetic's Silver won in 9min. 34 2-5sec., and Eremon in 9min. 47 1-5sec. —*Live Stock Journal.*

THE STREPTOTRICHOSES AND TUBERCULOSIS.

Abstract from the first of the Milroy Lectures, delivered before the Royal College of Physicians of London, on Feb. 17th, 22nd, and 24th, 1910, by ALEXANDER G. R. FOULERTON, F.R.C.S., ENG., D.P.H. CAMB., Lecturer on Bacteriology and Public Health to the Middlesex Hospital School, and County Medical Officer of Health for East Sussex.

In choosing the subject of my lectures I have been influenced by the fact that, owing to one cause or another, during the last ten years or so somewhat special attention has been given in the Middlesex Hospital Laboratories to the investigation of cases of streptotrichosis, a class of infections which, as there can be little doubt, are commoner of occurrence than the general run of clinical records would suggest; and this quite apart from any consideration of cases recognised specially as cases of tuberculosis. Difficulties arising because of the varying morphology of the parasites causing these infections, and often difficulties in the way of obtaining cultures of the organism on artificial media, must necessarily sometimes hinder the ready recognition of the exact nature of the infection in these cases. And the more likely does it appear that the nature of the special infection is not infrequently overlooked when we consider that although some cases of streptotrichosis present certain clinical peculiarities which one would be inclined to look upon as being more or less characteristic, yet such peculiarities are seldom sufficient in a particular case to enable a definite diagnosis of the kind of infection to be made on clinical grounds and without reference to the result of bacteriological examination. There is, in short, nothing in the history or clinical indications in the majority of the numerous cases of infection of parts about the mouth and neck, and in cases of appendicitis, for examples, which would enable a diagnosis of streptotrichosis to be arrived at without bacteriological identification of the causative parasite.

But, in addition to any clinical interest, this class of infections has a wider interest because of the apparent affinity between certain undoubted species of streptotricheæ and the parasite, or parasites, of tuberculosis. Our own investigations into the pathology of streptothrix infections, together with much work bearing on the subject which has been carried out elsewhere, have led directly to a very definite conclusion as to the relationship, amounting to actual generic affinity, between this class of infections and those recognised under the name of tuberculosis. And further, systematic comparison of the biological characteristics of the recognised streptothrix organisms on the one hand, and of different "strains" of the parasite of tuberculosis on the other leaves no doubt as to the correctness of the opinion held by certain earlier pathologists who, within a few years of Koch's announcement of his discovery of the cause of tuberculosis, maintained that the reputed bacillus was not, in fact, a fission fungus at all, but rather belonged to a higher group of mould fungi.

In what follows, after considering in some detail the general characteristics of the streptotricheæ and the pathology of the infections which they cause, I propose to deal with the evidence which is available in support of these two propositions: (1) That under the name of "tuberculosis" there are commonly included infections caused by more than one species of parasite; and (2) that the parasites, generally reputed to be bacilli, which are the cause of tuberculosis, belong in reality to a higher group of organisms, and should, as streptotricheæ, be included with the hyphomycetes, or mould fungi. Before proceeding, however, it will be well to explain some confusion which has prevailed in the past with regard to the nomenclature of streptothrix infections and which still persists to some extent. Thus, whilst in this country and in the United States the term streptotrichosis has been adopted generally, continental pathologists as a rule still favour the older designation for these infections, actinomycosis. And writers on general medicine have not always appreciated the fact that these two terms are absolutely synonymous; so that one sometimes finds, even in recent text-books, reference made to the streptotrichoses as if they were, as a class of disease, in some sort different from the actinomycoses. Confusion has been increased by the fact that the parasites of these infections have been described at one time or another under at least five different generic names—*Actinomyces*, *Cladothrix*, *Nocardia*, *Oospora*, and *Streptothrix*—three of which, *Streptothrix*, *Actinomyces*, and *Cladothrix*, are in current use.

The origin of this confusion is easily traced. In 1887 Bollinger described the disease of cattle caused by the aptly named *Actinomyces*, or ray fungus. In the following year Israel described some cases of actinomycosis in man and cattle which were caused, he believed, by one and the same parasite. In succeeding years, and until about 1890, numerous cases of disease in both man and lower animals were recorded as cases of actinomycosis; but usually the diagnosis was founded on the identification of a ray fungus in the tissues or in discharges by means of the microscope only, and without the use of bacteriological methods which would allow differentiation of morphologically similar, but specifically distinct, varieties of ray fungi. Amongst British bacteriologists who had interested themselves specially in these cases, Crookshank and M'Fadyean in 1889 expressed their belief in the specific identity of the parasite in all cases

of actinomycosis in man and cattle. In 1890 Bostroem, apparently after a more thorough personal investigation than had been carried out by any other pathologist, also affirmed the belief that all cases of actinomycosis represented infection by the one ray fungus. In 1891, however, Wolff and Israel described an organism, isolated from a case of disease in man, which was clearly a ray fungus of some species different from that which hitherto had been described as the only cause of actinomycosis.

Meanwhile, in 1888, Nocard had published a very careful account of the characteristics of a parasite which had been proved to be the cause of a common disease of a tubercular nature occurring in cattle in France and Guadeloupe and known as *farcin des bœufs*. The parasite was described as a fine, long bacillus, presenting occasional branching, which Nocard likened to the lateral branching of a common saprophytic fungus known at the time under the name of *Cladothrix dichotoma*, but since recognised as a streptothrix (*Streptothrix nigrescens*, Foulerton and Jones). Nocard's organism (*Streptothrix nocardii*) has acid-fast properties, and under the conditions of artificial infection causes a definite tuberculous condition in guinea-pigs. In 1890 Eppinger described under the name of *Cladothrix asteroides* another branching, acid-fast, organism which he isolated from an infection in man. This species, now generally known as *Streptothrix eppingeri*, has since then been repeatedly isolated from somewhat various cases of disease; and it is obvious that the results of an infection by this streptothrix also may be indistinguishable anatomically from a tuberculosis caused by Koch's bacillus. In 1894 Vincent isolated and described under the name of *Streptothrix maduræ* a parasite which he believed to be the cause of the mycosis known as madura foot, and he recognised the resemblance between the streptothrix and Bollinger's *Actinomyces*. In this way, then, confusion arose; but during recent years the nomenclature of these parasites has gradually become simplified, and, as already stated, the majority of pathologists in this country have come to a common use of the generic term streptotrichoses as the designation of infections by the streptotricheæ, or ray fungi.

The Position of the Streptotricheæ in Botanical Classification: their Morphology and Method of Reproduction.

Inasmuch as it is one of the purposes of these lectures to present evidence in support of the proposition that the reputed *Bacillus tuberculosis* is a parasite—or more probably represents several parasites—which has been placed erroneously amongst the bacteria or fission fungi, when its correct position as a streptothrix would have been amongst the mould fungi, the exact position in botanical classification of the genus *Streptothrix* itself becomes of importance.

In order to determine the botanical position of the streptotricheæ the type-development of the genus may be studied by watching the development of one of the quickly growing saprophytic species in a wet preparation kept at a suitable temperature under the microscope. The progress of growth con be followed quite easily. One starts with the spore, a spherical body which differs, it may be mentioned, from the spore of a fission fungus both in its staining properties and in its comparative resistance to heat. If a single spore is kept under observation one finds that within a few hours either two or three threads have begun to sprout from it. These threads gradually elongate, so that at an early stage of growth one has a typical "ray fungus," consisting of three mycelial threads, usually of unequal length, radiating out from the position occupied by the spore as a centre. From these primary threads lateral branches in turn sprout out; and soon there is a densely tangled mass of mycelium representing the fully developed stage of the organism. The next stage, that of transverse segmentation, is most conveniently studied in cultures on solid media. The branching mycelium, which hitherto has been apparently homogeneous throughout its length, now presents differentiated transverse segments, usually of irregular extent, produced by an obvious process of degeneration extending across the mycelium. And accordingly one sees, separated by larger or less intervals, a series of rod-segments which preserve, apparently unaltered, the original characters of the mycelium. The extent of the interval between successive rod-segments varies considerably. In saprophytic species especially the intervening degenerated portions are well marked and usually occur at irregular intervals along the mycelium. In some of the slow growing pathogenic species the persistent segments may be separated by only very narrow and regularly placed intervals, so that the segmetted mycelial thread has the appearance of a streptobacillary chain. Next there is a stage of fragmentation. The degenerated portions of the mycelium disappear and a conglomeration of separate rod-segments represents the original system of branching mycelium. These rod-segments may have a wavy or distinctly spiral shape, but, speaking generally, they are morphologically identical with bacilli, except that here and there a rod with the remains of a lateral branch still attached to it may be seen. With, or soon after, the occurrence of segmentation of the mycelium a special kind of spore formation, chain sporulation, may be observed. This process of sporulation also is best studied in cultures on solid media. In a typical instance special spore-bearing organs are developed, fine aerial hyphæ which, erecting themselves from the growth of mycelium, often cause a powdery or cretaceous appearance on the surface. Spores are produced in these ærial hyphæ apparently by a process of segmentation which is, perhaps, similar in its nature to that by which the rod forms are produced in the mycelium. Sporulation occurs in the hyphæ with uniform regularity, so that when the process is complete the appearance in a stained specimen is precisely that of a streptococcal chain. It seems probable, also, that under certain circumstances these spherical spores may be produced along the length of the mycelium as well as in the special hyphæ. When these successive phases can be clearly traced in cultures on artificial media, as in the case of saprophytic and certain freely growing pathogenic species, no difficulty as to the botanical position of the organism can arise. We have a typical hyphomyces or mould fungus with special spore-bearing organs, the aerial hyphæ.

The main variations which have been observed in individual species are: (*a*) with regard to comparative rapidity of growth; (*b*) with regard to the extent of degeneration of the mycelium between the persistent rod-segments; and (*c*) with regard to the frequency of lateral branching. In respect to the last point, branching may be so infrequent in growth under parasitic conditions that the mycelial tuft is distinguishable with difficulty from a mass of strepto-bacilli.

And, indeed, with some pathogenic species identification may be a difficult matter. In some cases typical ray fungi are not to be found either in pus from the lesions or in the tissues examined. In such cases all that one may find on microscrpic examination is a number of rod-segments which stain, often in a somewhat granular fashion, by Gram's method, and are occasionally acid-fast. In the examination of a specimen of the pus, suspicion may be raised by the general character of the rods; they may be unusually long and fine for bacilli, usually some will have a beaded appearance, and here and there a rod may show the remains of a lateral branch. Also the pus will usually contain microscopic masses of fine granular, or dust-like, material which stains deeply by Gram's method, and probably represents the *débris* of mycelium which has undergone a com-

pletely destructive degeneration. These fine granules are not to be confounded with the spherical spores; their staining characters are similar, but they are much smaller, and unlike spores appear collected in large masses. In pus one may also find calcareous masses representing tufts of mycelium which have undergone a peculiar cretaceous incrustation which happens with some species. On attempting culture of the parasite in such a case one finds frequently that growth, if obtained, is very slow. On nutrient agar there may be small, whitish, dry-looking, heaped-up colonies after six or seven days' incubation, or not until after a longer period. On examining the growth the appearance of the organism may be much the same as in the pus; there are long, fine threads which stain by Gram's method, and there may more distinctive evidence of lateral branching than was seen in the pus, especially if the culture is examined at an early date of growth. Later on spherical spores will appear on the medium. The appearances in cultures obtained in fluid media, such as pepton broth, are usually somewhat different and more distinctive. After a few days' incubation small speck-like colonies appear, either cohering in a filmy mass at the bottom of the medium or adhering, isolated, to the sides of the tube.* If these speck-like colonies are examined microscopically from time to time, they will be found to consist at first of the typical branching mycelium of a ray fungus which subsequently undergoes processes of segmentation and fragmentation, as already described. And it would appear that the difficulty in identification of some of these organisms in growth on solid media is due to the fact that segmentation and fragmentation of the mycelium follow rapidly on very slow growth. This description, it must be repeated, applies only in the case of certain slow-growing species of the type of those which I have described as *Streptothrix hominis* I. and II. In other pathogenic organisms of more vigorous growth the true type is identified as readily as in the saprophytic species.

The method of sporulation in the genus *Streptothrix* is of importance, since the rough classification of pathogenic achlorophyllous fungi into three main divisions, as adopted by pathologists for working purposes, is based mainly upon the method of reproduction which characterises the organism. Thus the bacteria, or fission fungi, are defined as unicellular organisms which reproduce themselves either by fission or by spore formation. In the one case the parent cell produces two new cells by a process of clean transverse fission; in the other case a single endogenous spore is produced, so that a single cell succeeds a single cell. The blastomycetes, or yeast fungi, are also simple unicellular organisms amongst which the new cell is produced by a process of gemmation or budding from the parent cell, or by a process of multiple endogenous spore formation in which the parent cell produces usually two, three, or four spores. In the hyphomycetes, or mould fungi, we have a more complex kind of organism in which sporulation is a function of specialised spore-bearing organs of various type, the simplest perhaps of which is represented by the aerial hypæ of the streptotrichæ and species of some other genera. With these differences of reproductive method there are, of course, differences in general morphology to be considered. But for the pathogenic species of fungi, at any rate, the special reproductive method is in itself a sufficient criterion.

The distinguishing characteristics of the spores of yeast fungi do not enter into the present discussion, and it has only to be mentioned now that, apart from the method of their production, the spores of mould fungi may be distinguished from those of fission fungi by two tests. First, the spores of a mould fungus do not stain by the special method of Moeller used for demonstrating the spores of fission fungi, but, on the other hand, stain deeply by Gram's method. And, secondly, the resistance to heat is less in the case of the spores of mould fungi than it is with the spores of fission fungi; also the difference between the heat resistance of the active and the spore forms of a mould fungus is less than the like difference in the case of a fission fungus. Thus in a case of a bacillus with a thermic death point at about 60° C., under the usual time conditions of exposure, the thermic death point of the spores will be at about 100° C. With a streptothrix, on the other hand, if the thermic death point of the young unsegmented mycelium is at about 60° C., the thermic death point of the sporing culture will usually be at about 75° C., showing a difference of only about 15 centigrade degrees of heat as against about 40° in the case of the fission fungus. The spherical spores of the streptotrichæ correspond in every respect with the spores of a mould fungus, and, as will be pointed out when the parasites of tuberculosis are specially considered, there is a high degree of probability, amounting almost to certainty, that the reputed bacilli of tuberculosis are reproduced by the methods characteristic of species of the genus *Streptothrix*.

It has been stated that the stage of full development of the streptothrix is represented by a system of branching homogeneous mycelium: something must be added as to the biological significance of the subsequently developed rod-segments and spherical spores. As to the nature of what have been described as the spherical spores there can be no doubt, and it is probable that the rod-segments also have to be considered as being, in a sense, spore bodies. That is to say, it is probable that these rod-segments represent a more resistant form, which is capable of producing a new mycelium directly, and by means of which in cases of disease the infection commonly is transported from one part of the body of the host to another. The fully developed mycelium obviously, because of its bulk, would not pass easily from one part to another, except by steady invasion along continuous tissues; and there are reasons for believing that when living as a parasite under many of the conditions applying in case of disease a streptothrix does not readily undergo complete sporulation with the development of spherical spores. But under parasitic conditions segmentation and fragmentation of the mycelium occur freely; isolated rod-segments will be carried from part to part readily enough, and by the examination of sections through recently established secondary foci of infection it has been possible to obtain evidence microscopically of the early sprouting of branching mycelium directly from rod segments and not from spherical spores.

The view now taken of the botanical position of the streptotricheæ has not always been accepted, but that some have regarded the morphology of the genus as indicating merely more or less accidental variations of a class of highly pleomorphic fission fungi; rod-segments have been regarded as bacilli, and it has been assumed that they habitually reproduce themselves by direct division after the recognised manner of fission fungi. The branching forms also have been regarded as representing accidental aberration from a normal bacillary type, whilst the spherical bodies have been looked upon as being merely coccal involution forms. This opinion cannot now be sustained, however, against the evidence of observed facts. At the present time there can scarcely be difference of opinion as to the nature and import of the spherical spores; the life-cycle of the organism, from spore to mycelium and from mycelium again to spore, is traceable so clearly that misinterpretation is barely possible. But the position is somewhat different with regard to the question as to the direct multiplication of the rod-segments. I have referred to these as being probably resistant spore bodies of a kind; and from what we know of the biology of others of the higher pathogenic fungi it is not impossible that under some conditions the rod-segments may reproduce them-

selves directly, and without intervention of the usual sporing and mycelial stages. It is true that we have at present no evidence that this multiplication of what may be termed "intermediate forms" as such actually occurs with the streptotricheæ, but we know that it does occur with the pathogenic fungus known as *Sporothrix Schenckii*, an organism resembling morphologically in some respects, and with regard to its pathogenic action closely, the species of this genus. If one follows the development of the sporothrix under conditions of culture on artificial media one observes this life cycle. The single spore sprouts, and usually three mycelial threads are produced from it; then secondary branching occurs very quickly; and, in the result, a tangled mass of mycelium, very much like that of a streptothrix, but of coarser substance is produced. In the sporulation of this mycelium two kinds of cells, which may be regarded as being of the nature of spores, appear. Spherical endogenous bodies, which I would describe as true spores, are developed in the length of the mycelium and in aerial hyphæ like those of the streptotricheæ; and ovoid exogeneous bodies, which I would term provisionally the "spore bodies," sprout out at the sides and from the ends of the mycelial threads. Under most conditions of culture on artificial media this sporothrix always reproduces itself in true fashion according to the type of a mould fungus. The sperical spores and the ovoid spore bodies never reproduce themselves as such, but, one or other, always yield a mycelium by a process of sprouting. Under parasitic conditions, however, the morphology of the sporothrix is different in that only the ovoid spore body occurs. If either a young mycelial or an older sporulating culture is inoculated under the skin of a mouse a progressive and widely spreading infection of the subcutaneous tissue follows. In the resulting granulomatous tissue vast numbers of the ovoid spore bodies will be found, but never, according to my own observations, either the mycelial form of the fungus or the spherical true spores. It appears to be quite certain that under the conditions of parasite life the intermediate ovoid form is capable of direct reproduction as such. And since the rod-segments of the streptotricheæ, like these spore bodies of the sporothrix, are capable of producing a new mycelium without an intervening spore stage, so it is possible that under parasitic conditions of existence they may also be capable of reproducing themselved directly as rod-segments, and thus simulating the true bacilli.

The Saprophytic Streptotricheæ.

The saprophytic streptotricheæ are widely distributed; found occasionally in water and fairly frequently in air, they appear, however, to be more especially soil organisms. The saprophytic species which have been studied specially in the laboratories at the Middlesex Hospital fall within two main groups. One group includes a freely growing type of organism which yields a widely spreading growth on artificial media. The development of aerial hyphæ is usually well marked, and their appearance is often accompanied by a chalky-looking efflorescence on the surface of the growth. In most of the species growth occurs at temperatures as high as 37° C., but in one or two species which have been examined the higher temperature limit for growth is a little above 22° C. In many cases the growth gives off a pronounced "earthy" or "mouldy" smell. Many species exercise an active ferment action on media in which they may be growing, peptonising gelatin and inspissated blood serum, and exercising an active diastatic action on starch. A single species (*Streptothrix alpha*, Price-Jones) amongst those which have been examined in my laboratories causes an active coagulation of milk; but several others exercise a peculiar action, possibly of the nature of a saponification, on th is medium, whereby the milk clears slowly from above downwards, whilst a very fine granular deposit of altered casein is gradually thrown down. As examples of this group of saprophytic species, *Streptothrix nigrescens* (*Cladothrix dichotoma*, Cohn), *Streptothrix nigra* Rossi-Doria), and *Streptothrix leucea saprophytica* (Foulerton) may be mentioned.

In the second group of saprophytic species there is a tendency for growth on artificial media to be within more closely circumscribed limits, and at the same time to become heaped up. The development of aerial hyphæ on the surface of the growth is marked by a dull, powdery appearance, rather than by the bright chalky efflorescence which characterises the growth of many species included in the first group. The strong mouldy smell is not in evidence, or may be very faint. Ferment action, and especially diastatic action is apparently less common, and when it does occur is usually less vigorous than with species of the other group. Some members of this group exhibit the peculiar, possibly saponifying, action on milk which has been already referred to. With some species of this group a peculiar action on gelatin has been noted; the medium is slowly changed to a fluid which is of a syrupy consistence at a temperature of 20° C. The change is quite distinct from that caused by an active peptonisation of gelatin with the production of a freely mobile fluid, such as commonly occurs; the condition appears to result from some change which causes a lowering of the melting point of the medium, for the gelatin sets again firmly if its temperature is lowered to about 8° or 10° C.

In this second group the mycelial threads are usually finer perhaps than in the other, and some of the species approximate in their general characteristics to the slower growing pathogenic, rather than to the freely growing saprophytic organisms of the first group. As examples of the second group one may instance two new chromogenic species which have been described in my laboratories, *St. chalcea*, a species of fairly free growth, and *St. erythrea*, an organism of slow growth on artificial media and resembling culturally in many respects the parasitic species.

It is not to be understood, of course, that the above general characteristics attributed to the two groups of saphrophytic species are in any sense inclusive—they merely indicate outstanding characters which, singly or together, are specially noticeable in two general types of organism.

Before leaving the saprophytic species the question of their thermic death point may be just mentioned. The thermic death point for 16 saprophytic species was determined by Price-Jones and myself with the following results:—

For 6 species death point was under			45°C.			
1	"	"	above	45°C.	: under	55°C.
4	"	"	"	45°C.	"	60°C.
3	"	"	"	60°C.	"	70°C.
2	"	"	"	60°C.	"	75°C.

The acid-fast properties of some streptotricheæ and of other apparently closely allied organisms will be referred to in detail further on. But it may be pointed out here that amongst the reputed bacilli which display acid-fast properties to a marked degree, and some of which have all the characteristics of a streptothrix, there are two (*Bacillus phlei* I and II, Moeller) which are common parasites of Timothy grass, and several others—such as the "cow dung" bacillus and the various organisms described as "milk" and "butter" bacilli—which probably also come from a vegetable source. The acid-fast properties of the Timothy grass bacilli and the others are due, of course, to the presence of a waxy substance in their body; and the elaboration of a complex organic substance of this nature from the grass on which they live affords an interesting instance of physiological activity in these low forms of vegetable life.

Then, again, when we come to consider the probable sources of streptotricheal infection for the higher animals, and after taking into consideration the fact that most of the animals which have been found to suffer from streptotrichoses are domesticated animals with whose diseases we are especially familiar, the importance of herbage as a probable habitat of pathogenic ray fungi is very noticeable. With the exception of omnivorous man and the dog, and a single case of infection in the cat, all the higher animals in which streptotrichoses have been described are strictly herbivorous. The probability of infection of swine by means of grain has been shown clearly; Johne was able to demonstrate the presence of ray fungi in awns of barley found impacted in the soft palate of the pig, and Korsak found grain covered with streptothrix organisms in the crypts of the tonsil of the same animal. Direct evidence of the possibility of infection of the ox in a similar way has been obtained, and the well-known case recorded by Soltman of a boy with a streptotrichial empyema of the chest, in the pus of which an awn of barley was found, may also be cited, together with several other cases of like nature which have been collected by Acland.

Omitting for the present any reference to conditions described as tuberculosis, streptothrix infections have been described in many species of animals. First, and merely as indicating the range of distribution of the streptotricheæ as parasites, it may be mentioned that I have on one occasion isolated a typical species from the body juices of an oyster. Ascending the scale, streptotrichosis of the liver has been recorded by Terni and Galli-Valerio in two species of lizards (*L. agilis* and *L. viridis*), and the parasite *Streptothrix lacertæ*) has been isolated and described. Streptothrix infections have also been recorded in birds; and, in particular, Rossi has described fully a species which he isolated from two cases of streptotrichosis of the liver in chickens. Also Artault in a bacteriological investigation into poultry eggs isolated two species—an organism resembling Bollinger's original ray fungus and *Streptothrix nigra*.

Of mammalia other than man, the following species are known to be liable to this kind of infection. Amongst domesticated animals the ox appears to be the most susceptible. In the common streptotrichosis of the tongue in this animal, apparently caused most frequently by the original ray fungus of Bollinger, clear evidence of the usual source of infection is forthcoming. If sections are made across the tongue in early stages of the disease numerous nodules, varying in size from that of a small pea upwards, will be found situated close to the dorsal surface. Often these nodules actually involve the mucous membrane, others will be found just below it, and the condition is one which obviously results from multiple infections through abrasions of the mucous membrane. But, beyond this evidence, various writers—Piana, Kouritsine, and Neuwith—state that they have demonstrated the presence of streptothrix organisms growing on fragments of grain which have become impacted in the mucous membrane of the tongue. The streptotrichosis in cattle due to infection by Nocard's organism has been observed apparently only by French veterinary pathologists, in France and in Guadeloupe and certain other tropical islands. In addition to these, two other species (*Streptothrix bovis alba* and *S. bovis luteo-rosea*) have been described by Gasparini as infecting the ox; a third species (*Streptothrix bovis sulphurea*) described by Rivolta is probably identical with the original ray fungus of Bollinger.

After the ox the pig is, of domesticated animals, probably the most frequently affected by this kind of disease. Besides infection by Bollinger's ray fungus, another form of streptotrichosis especially affecting the muscles has been described by Hertwig, Duncker, and Virchow to a distinct species, *Streptothrix musculorum suis*; but, so far as I know, no detailed description of the parasite has been published. Heinick when investigating the normal bacteriological flora of the pig's intestine found streptothrix organisms amongst others. The horse also suffers from streptotrichoses; and a species closely resembling a type of streptothrix which infects man has been isolated by Dean from a submaxillary abscess. Sheep apparently suffer from streptotrichoses but rarely; infection of the tongue, however, and a generalised form of infection have been described, but there is no definite information available as to the characteristics of the sheep parasites. From a case of an apparently tubercular disease of the lungs in a goat Silberschmidt isolated a well-differentiated acid-fast species, which does not correspond with any species yet found in other animals. On inoculation into the guinea-pig *Streptothrix caprœ* causes a general infection with typically tubercular lesions. A case of streptotrichosis of the liver in the stag has been recorded by Schreiber; and Nocard quotes Monfallat as having proved streptotrichosis of the jaw in the llama and in the guanaco of Chili. Schmorl has described an outbreak of disease caused by a parasite described as *Steptothrix cuniculi* amongst the rabbits kept in one particular pen in the Pathological Institute at Leipzig. And, to complete the list of herbivorous animals affected, a case of streptotrichosis in the elephant has been recorded. Except for a single case of streptotrichosis in the cat described by Rivolta, the dog is the only other mammal lower than man in which this kind of infection has been definitely proved. Rabe has recorded two cases, one apparenly of suppurative cellulitis and the other a peritonitis, caused by a parasite termed *Cladothrix canis*, and similar streptotrichoses in the dog have been described by Rivolta and Vachetta; but the nature of the infecting organism in the particular cases is a little doubtful. I have, however, recently received from Captain A. Whitmore, of the Indian Medical Staff, a culture of a typical streptothrix which was the cause of fatal pneumonia in a fox terrier. The well-known occasional habit of grass-eating in the dog may possibly explain partly the liability to this kind of infection.

Veterinary Inspection at Shows.

To the Editor of the North British Agriculturist.

Sir,—It is with surprise and regret that one sees the oldest agricultural journal in Scotland, and one credited with enlightened and progressive views, in dangerous proximity to the opponents of compulsory veterinary examination at shows.

The question must always be a difficult one, because, depending upon the individual opinions of many practitioners, though these be given in absolute good faith, we are bound to have conflicting and disconcerting decisions. All the arguments used in your leading article last week, and many others, were annually reproduced after the first five or ten shows of the Royal Commission, but, though anomalies do still occasionally recur, the general fairness and skill of the examiners is now universally recognised, also the necessity for and benefit derived from veterinary examinations. In the case of the Royal Commission the cause for complaint was even greater than at the recent stallion show in Glasgow. You refer to animals being condemned at the latter which had been passed sound there last year. This might well be, while both decisions were correct, the defect having developed in the interim. At Islington, however, on several occasions, thoroughbreds condemned one year as unsound from hereditary disease have been passed sound on reappearance in subsequent years. This is a much more disconcerting incident, to be accounted for, of course, by the differences which will always exist in professional as in other opinion. Possibly

one examiner may be more sympathetically credulous than his predecessor as to that stroke on the eye with a switch, that kick on the seat of curb, or that tramp on the coronet.

No one argues that veterinary inspection is perfect; all that is claimed for it is that, defective as it may be, it is infinitely more beneficial than the alternative—no inspection. Is it not better than an occasional error of judgment should condemn a sound animal—even were it proved that it has ever done so—than that any number of undoubtedly unsound stallions should travel the country with the *imprimatur* conveyed in winning the Cawdor Cup, the Brydon Shield, or a Highland Society's first prize, disseminating disease, causing loss and vexation to breeders, and discrediting the breed, both at home and abroad?

Your phrase "the extraordinary rigour of the veterinary arbiters" I hardly understand. The gentlemen referred to are of high standing in their profession, and having the advantage of experience gained in large general practice. I know you had no thought of suggesting *mala fide* or anything in any way resembling it. They should be, and doubtless are, able to detect disease as well as other practitioners, and, having detected it, or failed to do so, where is there room for "rigour?" They have merely to state a fact—the animal was found to be sound, or it was not; nor must we forget the important confirmatory circumstance that the two experts under review were unanimous in every decision.

As to veterinary scientists being "agreed among themselves as to what constitutes heriditary unsoundness," that point hardly arises here; a schedule of those diseases which they were, for the purpose of this examination, to regard as constituting hereditary unsoundness, was supplied to the veterinary examiners, and by that they had to work; not being invited to give any opinion as to whether the schedule was correct or not. As to veterinarians in general being "agreed in their diagnosis in particular cases," every one knows that they are not, any more than doctors, clergymen, lawers, or specialists in any other line.

An experienced veterinarian should be and is able to distinguish between "thickness of wind (resulting from overfeeding) which would disappear as the animals were put into hard work," and roaring. During the three weeks commencing last Tuesday, any one interested can see it being done regularly, at the Agricultural Hall. But I *am* suprised to find you styling roaring a "so-called hereditary defect" which "is rarely transmitted to the progeny." This is so contrary to the opinion and experience of the great majority of those who have been intelligently associated with horse management in the present and many previous generations, that it will require more than the instance of Ormonde, even if it supported your novel theory, to secure general assent. I think if you will investigate or make enquiries in competent quarters, you will find that the "family history," as the life insurance offices say, of the tribe from which Ormonde sprang is conclusively against you. In any case, one swallow does not make a summer. Also, if I remember aright, a large portion of Ormonde's stud career was passed in South America, where climatic conditions render roaring practically dormant. For every instance of exemption from hereditary roaring I feel assured that a dozen of its recurrence could be cited.

The schedules of hereditary diseases upon which the English Breed Societies base their examinations are the result of much study, also consultation with the leading veterinary and equine experts. The Clydesdale Horse Society, when framing its schedule, had at its disposal these previously existing ones, and could submit them to its professional advisers and experts. Practically the only cases in which English and Scottish veterinarians sometimes differ are those relating to nervous, brain or spinal troubles, and I fancy most breeders of Clydesdales consider that they have ample data upon which to form their own opinions as to the hereditary nature of this taint, without expert assistance.

Your report of the causes of disqualifications at the recent stallion show will surprise no one, as it has been generally recognised by those intimately associated with the Clydesdale that his respiratory organs are his weakest point, not naturally but because little attention has been paid to this defect, and it is notorious that some of the most popular stallions of about a quarter of a century ago were rank roarers. By constant study and careful breeding we had, to a great extent, eliminated unsoundness of the feet (there was a rumour in the recent show that sidebone was being re-introduced through one popular strain, but of this I cannot speak from personal knowledge), but very little attention has been paid to the other extremity. Other breeds have corrected respiratory and other infirmities through their Breed Societies insisting upon strict veterinary examination at their shows: having had a praiseworthy lead given them by the Royal. Why should Clydesdale breeders dread similar treatment? Doubtless cases of individual loss and disappointment will occur, and consequently we cannot expect exhibitors to take the lead in pressing for compulsory examination, but it is surely better that one animal here and there should be condemned rather than that the whole breed should suffer. All, including the owners of the condemned, will gain by establishing complete confidence, especially abroad, in the soundness of our breed of draught horses. I hope and believe that you are pessimistic in fearing that dread of veterinary examination will prevent owners from putting their stallions into competition for the Cawdor Cup or Brydon Shield. Let them look at Islington, and take courage. I am, etc.

OPTIMIST.

[We are indebted to *The North British Agriculturist* for an advance copy of this letter, and of the leader upon it, which, unfortunately, is crowded out of our pages this week.]

PARLIAMENTRY.

In the House of Commons, Monday, Feb. 28.

BILLS PRESENTED,

Sir FREDERICK BANBURY (City of London, Opp.)—To prohibit experiments upon dogs.

NOTICES OF MOTION.

Capt. J. GILMOUR (Renfrewshire, E., Opp.)—On the Army Estimates, to call attention to the supply of horses for the Army.

Trotting in Christchurch, N.Z.

Stewards Handicap, value 110 guineas.—Won by bay mare Lenape, 7 years old: Distance 2 miles: Time 5 mins. 13 sec. Owned, trained, and driven by Mr. J. R. Charlton, M.R.C.V.S.

[Among the young horses that competed at the recent Plumpton meeting, there was nothing that took my eye more than Mr. J. R. Charlton's colt Rexcordium, a three-year-old gelding by Mauritius—Queen of Hearts. He is not a big one, but he is quality all over, and when he becomes seasoned I am prepared to find him winning plenty of good races.—*Weekly Press*, Christchurch]

Personal.

Mr. SAMUEL SHERWEN CAMERON, the son of a Cumberland and North Lancashire farmer, has risen to be Chief Government Veterinary Officer in Australia, and has succeeded at Melbourne in obtaining the degree of Bachelor and Doctor of Veterinary Science. This is the first degree of doctor of veterinary science issued by a British university, although such degrees have been issued by Continental and American universities for some time past. It is twenty-one years ago since Dr. Cameron left Barrow—his father farmed at Rampside—for Melbourne. He was educated at Barrow St. James' School and Mr. Speight's Commercial School, afterwards studying at the New College, Edinburgh, where he took his M.R.C.V.S. degree. At present he is the Chief Government Veterinary Surgeon in Australia, where there is Government control of stud horses, for which certificates of soundness and approval are granted. —*L. S. J.*

ARMY VETERINARY SERVICE.

Extract from *London Gazette*,

WAR OFFICE, WHITEHALL, Feb. 25.

ARMY VETERINARY CORPS.

The undermentioned Lieuts. to be Capts.—H. C. Dibben, A. Edgar, H. M. Williams, K. McL. McKenzie, J. S. Nimmo, B. H. Lane, J. W. Rainey. Dated February 4.

TERRITORIAL FORCE. UNATTACHED LIST.

M. T. Sadler to be Vet.-Lieut. Dated Jan. 1.

INDIAN CIVIL VETERINARY DEPARTMENT.

It is with regret we report the death at Bombay on Feb. 28th of Lieut.-Col. F. Joslen, F.R.C.V.S., Indian Civil Veterinary Department, Principal Bombay Veterinary College, caused through injuries to the skull from an accident.

This officer was born April 22nd, 1861, and was Gazetted to a Commission in A.V.D. May 9th, 1884. He was promoted Captain May 9th, 1894: transferred to the Indian Civil Veterinary Department July 23rd, 1896: promoted Major May 20th, 1902, and Lieut.-Col. June 5th, 1909.

Extract from *Gazette of India*,

Dated January 27.

Capt. J. D. Holmes, M.R.C.V.S., M.A., D.SC., Imperial Bacteriologist to the Government of India, Muktesar Laboratory, is granted three months' privilege leave under Articles 246 and 260 of the Civil Service Regulations and in continuation furlough for six months.

Maj. F. S. H. Baldrey, F.R.C.V.S., D.V.H., Supt., Civil Veterinary Dept., Central Provinces, is appointed to officiate as Imperial Bacteriologist to the Government of India, Muktesar Laboratory, during the absence of Capt. J. D. E. Holmes.

OBITUARY.

ALFRED R. WILLIAMS, M.R.C.V.S., Newton Abbott.
Graduated, Lond: April, 1871.

Death occurred suddenly on Feb. 24th, from cerebral hæmorrhage. Aged 63 years.

WILLIAM KNIGHT LEWIS, M.R.C.V.S., Tarporley, Cheshire.
New Edin.: April, 1877.

Mr. Lewis died on Feb. 10th from heart failure, at the age of 53 years.

Lieut.-Col, FRANK JOSLEN, F.R.C.V.S., C.V.D., India.
Lond: March, 1882: Fellow, Dec., 1905.

CORRESPONDENCE.

ROARING, OR WHISPERING?

Sir,

I enclose extract from Monday's *Sportsman* (Training Notes). If this is not advertising, then what is?—Yours truly,

NOT A PROFESSOR!

February 23.

"Speaking of roaring reminds me that Prof. Hobday, of London, is at present performing a new operation for the relief of roaring, and he tells me that the few cases he has so far dealt with have been most successful. The operation consists of cutting down on the larynx, stripping off the mucous membrane that lines the ventricle of the larynx, and so making two raw surfaces, which will eventually adhere and cause the arytenoid cartilage to become fixed against the side of the glottis by cicatricial adhesion. To those who know the anatomy of the larynx the idea sounds feasible enough, and I shall make it my business one of these days to see the operation performed. Prof. Hobday has very kindly offered to let me know when he is performing, so that I may assist at one operation at least. After that I shall be able to let my readers know more on what must be to them, as it is to me, a very interesting subject."

A FEW MORE QUESTIONS.

Sir,

I have been told that strangles and other specific infections do not attack joints and cartilages in the manner of poll evil, fistulous withers, etc.

1. Describe joint evil, its organisms, mode of attack of cartilage joints etc. Also scrofulous and rheumatic arthritis?

2. Describe the organisms of distemper. Is the disease due to a coccus similar to influenza?

3. Describe the varieties of cocci found in influenza?

4. We live in a battle of phagocytes versus septocytes. Describe their battle in nasal catarrh, diarrhœa, and sweating illness away?

5. It has been said: Brush a colt and he never makes a horse. Do the glands of the bowels ever become healthy after a bad attack of strongylosis invasion?

6. I have noticed that cab-horse disease is mostly due to bruising by the opposite foot. Describe progress of the disease?

7. The trouble with horses feet is mostly contraction from loss of expansion due to shoeing. Malnutrition from this cause may set up navicular disease, necrosis of the lateral cartilage etc. Is this wrong?

8. If corn is due to bruising rather than contraction, the old saying "Once a corn always a corn" must be incorrect?

If Mr. G. Mayall will kindly oblige again I am sure it will be of great interest to me, and thank him for past favours in this respect.—Yours respectfully,

GEO. UPTON.

Sir,

I am enclosing a copy of a paragraph from "Cows in India. I thought if printed in *The Record* it would amuse some of the profession.—Yours truly,

M. C. FOREMAN.

Jamulpur, India. Feb. 2.

"*To Dose a Cow.*—Make her lie down by the following method: Tie up a fore leg, then fix a rope to her tail, pass it between her legs and pull: she will sit down at once. A man should then sit on her neck and raise her head by holding her nostrils with one hand, thrust the other hand into her mouth, seize her tongue, and draw it to one side of her mouth, while another man passes the bottle down her throat by the side of her tongue and gives her the dose."

Communications for the Editors to be addressed 20 Fulham Road, S.W.